Comparative Advantage and Competitiveness of Wheat Crop in Pakistan

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This study was conducted to analyze the comparative advantage and competitiveness of wheat crop and its implications for resource allocation towards competing crops. The extent of policy distortion and agricultural protection was also determined by the study. The data were collected from APCom on cost of production of wheat crop over the three year period (2001-2003). Two main provinces contributing towards wheat production i.e. Punjab and Sindh were selected as the sample. This data were then averaged to obtain a national scenario. The crop budgets were prepared initially in financial terms and later on economic prices were utilized to evaluate the comparative advantage and competitiveness of the wheat crop. The Policy Analysis Matrix (PAM) was selected as the analytical framework. The policy distortions were measured through Nominal Protection Coefficient (NPC) and Effective Protection Coefficient (EPC). The Domestic Resource Cost ratio (DRC) was selected as a measuring tool for comparative advantage. Keeping in view the importance of wheat in the economy, the analysis was conducted in two price regimes i.e. import and export parity prices. The analysis results showed that at import parity price Pakistan has a comparative advantage in the production of wheat only as an import substitution crop. At export parity price, Pakistan is not competitive in the world wheat market and has no comparative advantage in wheat production.

I. Introduction

Wheat is the staple food crop for Pakistan, dominating all crops in acreage and production. Wheat is sown on more than 8 million ha having a share of 37.1 percent of the total cropped area, 65 percent of area and 70 percent of the production of food grain crops. Wheat contributes 13.8 percent to the value added in agriculture and 3.4 percent to agricultural GDP and is mainly grown under irrigated conditions.

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There was a bumper crop of wheat with a production level of 21.8 million tons in the year 1999-00. This shows the price responsiveness of Pakistani farmers as the support price of wheat was increased to Rs.300 per 40 kg (APCom, 2002). The growers increased the area and also provided good quality of seed, augmented doses of fertilizer and better management practices. In the consecutive three years from 2001 to 2003 production declined to 18-19 million tons.

Pakistan was a net importer of wheat during the last decade up to 1998-99. On an average, Pakistan spent US $ 352 million on the import of wheat from 1989-90 to 1999-00. Pakistan was graduated from net wheat importer to exporter due to a bumper harvest in the year 1999-00. But unfortunately, Pakistan produced wheat at a very high cost of about $ 150 per Mt against the border price of $ 130 per Mt. Thus, Pakistan could not fetch a ready market for export (GOP 2002-03). The domestic requirement of wheat is nearly 22 million tons. However, the continuous decline in production in the next three years forced the country to import one million tons of wheat (GOP 2003-04).

In view of its importance and implications of the Uruguay Round of Agreement on Agriculture (URAOA), it is imperative to assess economic efficiency and competitiveness of wheat crop production. It is further required for policy making to maintain a self-sufficient level of wheat and rational allocation of scarce resources in both at import and export parity.

The international competitiveness and effects of policy intervention stands out as most critical. The removal of market intervention desires change in the structure of economic incentives. This in turn will cause major adjustments in the pattern of production, allocation of resources and trade flows. It is therefore crucial for a country like Pakistan to exploit the comparative advantage in the production and trade of agricultural commodities (Hassan 1999).

The use of comparative advantages analysis deals not only with on-farm production but incorporates downstream collection, processing and wholesaling activities. It thus provides an analysis of an entire commodity chain (Slinger, 1997). In terms of international trade, comparative advantage refers to a comparative cost advantage in producing commodities and explains observed trade patterns according to country differences in resource endowments, investment patterns, technology, human capital and managerial expertise, infrastructure and government policies. The term competitiveness encompasses not only relative prices and the ability to

market but also quality differences, production and distribution costs, and production and distribution efficiency (War 1994).

The study of comparative advantage of the wheat crop is of great importance for Pakistan to know the current and future potential of wheat in international trade. Further to check the consistency of the current set of policies with the existing pattern of competitiveness.

Appleyard (1987) studied the comparative advantage in the agriculture sector in Pakistan. The results showed that Sindh has more comparative advantage in the production of wheat for the study period. Longmire and Debord (1993) indicated that comparative advantage prevailed in the production of wheat crop in Pakistan. Khan (2001) observed that Pakistan did have comparative advantage in wheat production for food self-sufficiency but not for export purposes at the current input-output price relationship. Akhtar (2004) showed that domestic wheat production is not economically competitive with imports. The wheat growers were disprotected by the state pricing, trade policy and market situations.

2. Material and Methods

The study was based on secondary data and the time series cost of production data were obtained from the Agriculture Price Commission (APCom); the policy organ of the Ministry of Food and Agriculture Stocks, Pakistan. The COP data were collected for three harvesting years i.e. 2000-01 to 2002-03 for the two provinces, Punjab and Sindh.

The Policy Analysis Matrix (PAM) was selected as the analytical framework. The Policy Analysis Matrix (PAM) is a computational framework developed by Monke and Pearson (1989) and augmented by Masters and Winter-Nelson (1995) for measuring input use efficiency in production, comparative advantage and the degree of government interventions (Nelson and Panggabean, 1991).

The PAM addresses three principal issues:

- The impact of policy on comparative advantage and farm level profits

- The influence of investment policy on economic efficiency and comparative advantage.

- The effects of agriculture research policy on changing technologies.

The PAM was designed in the study by incorporating revenues and costs, taken from private and social budgets of the wheat crop. To prepare the social budgets the parity prices of wheat and fertilizer were used. The tradable inputs, for which the parity prices were not utilized, were weighted by the premium. The premium is the ratio of the shadow exchange rate (SER) to the official exchange rate (OER) and for the study period was estimated as 1.138. The data were then analyzed to assess competitiveness and comparative advantage at the production level. The measurement of comparative advantage and policy distortions in agriculture was developed through the approaches of Domestic Resource Cost (DRC), Nominal Protection Co-efficient (NPC) and Effective Protection Co-efficient (EPC). Many studies in the near past have utilized PAM to evaluate the comparative advantage and policy effects in Pakistan [Appleyard (1987) Longmire (1993)].

Pakistan was a regular importer of wheat up to 1999-00, annually importing 2 to 4 million tons. Therefore, estimation of import parity price of wheat is imperative. Pakistan had a bumper wheat crop in the year 1999-00 and provided a sizable exportable surplus. Pakistan exported nearly one million tons of wheat in 2001-02 for the first time. Thus, Pakistan has the potential to produce exportable surplus to earn foreign exchange. However, the country faced some difficulties in exporting wheat due to high production cost. Therefore it is imperative to analyze the competitiveness and comparative advantage in production of wheat in both import and export parity prices.

3. Empirical Estimates

3.1. Export Parity Price Analysis

The PAM results for Punjab highlight that the NPI was 0.89 and the NPC was 0.70 (Table-1). It showed that farmers were paying for inputs prices close to the border prices. The wheat crop was not provided any subsidy or support, rather was under priced. The EPC with a value of 0.62 indicated that the producer of wheat was not provided any type of protection. The DRC was 0.54 showing that Punjab has a strong comparative advantage in wheat production as an import substitution commodity (Table-1).

Table-1: Policy Analysis Matrix for Wheat in Punjab at Import Parity Price

	Revenue	Production costs		Profit		
		Tradable	Non-tradable		NPI=	0.89
Private prices	10388.33	4061.73	5350.63	975.98	NPC=	0.70
Social prices 1	14795.58	4588.69	5465.29	4741.60	EPC=	0.62
Divergence 1	-4407.25	-526.96	-114.67	-3765.62	DRC=	0.54

The results in Table-2 show that the NPI and NPC have the values of 0.87 and 0.89 respectively for Sindh and one can draw the same conclusions for the Punjab. The EPC has a value of 0.90 that supports the conclusion drawn through NPI and NPC. It explains that the wheat crop was not getting any protection neither in the input market nor in the output market. The DRC was 0.62, indicating a comparative advantage possessed by Sindh in wheat production at Export parity price.

Table-2: Policy Analysis Matrix for Wheat in Sindh at Import Parity Price

	Revenue	Production costs		Profit		
		Tradable	Non-tradable		NPI=	0.87
Private prices	9100.00	3196.21	3957.03	1946.77	NPC=	0.89
Social prices	10225.21	3657.90	4049.77	2517.54	EPC=	0.90
Divergence 1	-1125.21	-461.69	-92.75	-570.77	DRC=	0.62

At the national level the NPI has a value of 0.88 and NPC 0.79; explaining no support was provided on inputs. The EPC supported the results that the government was not providing any support to inputs and output during the study period. Wheat was under priced that discouraged the farmers to produce more wheat. The DRC 0.58 showed that Pakistan has a comparative advantage in wheat production as an import substitution crop.

Table-3: Policy Analysis Matrix for Wheat in Pakistan at
Import Parity Price

	Revenue	Production costs		Profit		
		Tradable	Non-tradable		NPI=	0.88
Private prices	9766.04	3646.80	4661.81	1457.43	NPC=	0.79
Social prices	12404.90	4141.12	4765.52	3498.26	EPC=	0.74
Divergence	-2638.86	-494.32	-103.71	-2040.83	DRC=	0.58

3.2. Import Parity Price Analysis

The results of the Policy Analysis Matrix for wheat on export parity basis are given in Table-4. The NPI is 0.89 indicating a slight variation between domestic and foreign price of inputs. It means farmers are paying nearly the world prices for tradable inputs and there was no government support and tax. The NPC has a value of 1.82 showing higher price in the local market than at the international level. The EPC value of 5.63 showed lack of competitiveness in wheat production at export parity prices. The DRC was 4.86 showing no comparative advantage in wheat production at export parity price. The analysis overall shows that Punjab has no competitiveness in the world wheat market at import parity price.

Table-4: Policy Analysis Matrix for Wheat in Punjab at
Export Parity Price

	Revenue	Production costs		Profit		
		Tradable	Non-tradable		NPI=	0.89
Private prices	10388.333	4061.731	5350.626	975.976	NPC=	1.82
Social prices	5712.703	4588.691	5465.295	-4341.283	EPC=	5.63
Divergence	4675.631	-526.960	-114.669	5317.259	DRC=	4.86

The results of PAM for Sindh are given in Table-5.The NPI for Sindh was 0.87 expressing that farmers were paying nearly world prices for tradable inputs. During the study period there was no subsidy and no tax on inputs. The NPC has a value of 1.91 indicating farmers were getting higher prices as compared to international prices. The provincial government was providing subsidy in the form of transportation cost and other incidentals. The EPC value was 5.33 showing no economic

advantage and reinforced the inferences drawn by NPI and NPC. The DRC was 3.65 depicting Sindh has no comparative advantage in wheat production at import parity price.

Table-5: Policy Analysis Matrix for Wheat in Sindh at Export Parity Price

	Revenue	Production costs		Profit		
		Tradable	Non-tradable		NPI=	0.87
Private prices	9100.000	3196.206	3957.027	1946.767	NPC=	1.91
Social prices	4766.141	3657.898	4049.774	-2941.531	EPC=	5.33
Divergence	4333.859	-461.692	-92.747	4888.298	DRC=	3.65

The Policy Analysis Matrix obtained in Table-6 shows that Pakistan has no competitiveness in wheat production at export parity prices. The NPI is 0.88 showing small protection to wheat producers in input use and farmers were paying close to border prices for their inputs. Small protection was given in the form of indirect subsidy to irrigation water. The NPC was 1.86 indicative of higher output price of wheat in the local market as compared to the border price. The EPC ratio of 5.57 supported the earlier conclusion through NPI and NPC. The DRC was 4.34 showing absolutely no comparative advantage in wheat production at the import price. This explains the dilemma of wheat export in the previous years. Pakistan has to export wheat at a much lower price than the production cost. Wheat is the staple food and important food security crop, so the government does procure at the national support price and also the provincial government provides subsidized transport and incidental cost to provide wheat at an affordable price to the consumer especially in the urban areas. The Pakistani farmer is producing wheat at a very high cost, thus he cannot compete in the international market.

Table-6: Policy Analysis Matrix for wheat in Pakistan at Export Parity Price

	Revenue	Production costs		Profit		
		Tradable	Non-tradable		NPI=	0.88
Private prices	9766.042	3646.800	4661.812	1457.430	NPC=	1.86
Social prices 1	5239.422	4141.120	4765.519	-3667.217	EPC=	5.57
Divergence 1	4526.620	-494.320	-103.707	5124.647	DRC=	4.34

Conclusions:

The study was carried out to find the comparative advantage and competitiveness of the wheat crop both at the export and import level. The Policy Analysis Matrix (PAM) was selected as the analytical framework. The crop budgets were developed on the basis of financial and economic prices in two major provinces, Punjab and Sindh and then for Pakistan. It was concluded that during the study period Pakistan has no comparative advantage in the production of wheat at the export parity price thus has lost its competitiveness in the open market. The cost of production of wheat is much higher in the country that makes the Pakistani farmer unable to compete in the world market. In addition to this high transportation charges and poor quality of wheat also increased the marketing costs. On import parity price Pakistan has a comparative advantage in producing wheat as an import substitution crop.

Recommendations

1. The country should reap the comparative advantage of the wheat crop by reducing the input cost and or increase the productivity of the crop.

2. The cost of production of the wheat crop must be reduced either by using cost saving technology or by increasing the productivity of the crop through high yielding varieties and better management practices.

3. The input delivery system is not efficient; therefore black marketing, under bagging, sale of adulterated chemicals, poor quality and off type seed and substandard fertilizers require strict monitoring.

4. The total productivity of the crop depends heavily on seed quality along with other factors. The provision of various seeds must be ensured from seed companies, dealers.

5. The market imperfections must be removed through marketing efficiency and institutionalization of market intelligence.

6. The value added per acre-inch of water shows the criticality of this vital input. The present flat rate system is allocativly neutral leading to misallocation of this scarce resource. Therefore the water pricing of this input is imperative for its rational allocation.

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